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ABSTRACT

In the fall of 1997, a senior level course was taught as an interdisciplinary class for learning the processes in food product development. The course implemented many new teaching methods and technologies. It was an effort between two departments: food science and agricultural economics. Students worked in teams with industry mentors who assisted in elaborating on some of the procedures involved in the development process of food products. It was intended to take this class beyond the walls of Penn State University in the fall of 1998 and include other locations. An opportunity arose to link up with students in a food marketing class in St. Joseph's University. This opportunity included finding ways to share resources and involving students with each other. Speakers were shared and some collaborative work was done during the 1999 year using PictureTel. The classes were scheduled for the same time of day to facilitate cooperation. During the fall semester of 2000, it was decided to take the process a step further and truly integrate the teams for working on projects and assignments. Teams were formed to work together on the course project. There were three different versions of the course. One course was totally integrated. The second version shared the speakers and had some lectures on the off days. The last course was taught traditionally with lecture and few outside speakers or influences. All three used case studies to assist in the learning process. In all three cases, the students were asked to create concept maps and take a mini knowledge test to be used in the evaluation process of understanding concepts before and after the course. This paper discusses aspects of the fully collaborative, partially collaborative, and traditional courses, as well as the evaluation study that looked at the differences in learning for the different teaching methods. (AEF)

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Three Approaches to Teaching the Same Subject at Two Universities

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A collaborative effort was established between two major universities to teach a particular subject. The course was taught 3 different ways: full collaboration, half collaboration, and a traditional method. This paper will discuss the methods used and why it was implemented and organized in this manner.

Background to the Course

In the fall of 1997, a senior level course was taught as an interdisciplinary class for learning the processes in food product development. The course implemented many new teaching methods and technologies. It was an effort between two departments: food science and agricultural economics. Students worked in teams with industry mentors who assisted in elaborating on some of the procedures involved in the development process of food products. It was intended to take this class beyond the walls of Penn State in the Fall of 1998 and include some other locations. An opportunity arose to link up with students in a food marketing class in St. Joseph's University. This opportunity included finding ways to share resources and for the students to get involved with each other. Speakers were shared and some collaborative work was done during the 1999 year using PictureTel. The classes were scheduled for the same time of day to facilitate cooperation.

Fall semester of 2000, it was decided to take the process a step further and truly integrate the teams for working on projects and assignments. Teams were formed to work together on the course project. There were three different versions of the course. One course is totally integrated. The second version will share the speakers and have some lectures on the off days. And, the last one was left alone to be taught traditionally with lecture and few outside speakers or influences. All three used case studies to assist in the learning process. In all three cases the students were asked to create concept maps and take a mini knowledge test to be used in the evaluation process of understanding concepts before and after the course.

Aspects of the Fully Collaborative Course

There are several distinct features of the fully collaborative food product development course. The course was originally conceived to apply principles of constructivist theory. In this approach, prior knowledge and experience is the springboard for useful, personal knowledge construction. "Constructivist learning experiences and appropriate classroom practices include reflective thinking and productivity; authentic activities, including student collaboration and consideration of multiple perspectives, and student access to content area experts who can model domain-specific skills." (Grabe & Grabe, 1998) Course organization was based on the idea that the students would be able to reflect on situations and environments in order to make application towards the course project.

Jonassen (1996) also has much to say about constructivist learning environments. "Constructivist environments facilitate learning through collaboration, context, and construction of knowledge. Through assimilation and accommodation, individuals use many elements of the learning context and relate those elements to their own experiences thus creating new knowledge". Constructivism does not always produce predictable learning outcomes. Instruction should foster the constructive process of the learner, and not attempt to closely control the process or result. The process of instruction and role of instructor should be as a guide to discovered knowledge. There was not a specific result desired in the course rather a process that was to be fine-tuned. Contextual situations were provided with the case studies and industry speakers. The use of case studies was implemented to assist in developing critical thinking. Students were expected to apply prior knowledge and seek out new knowledge to fill in the gaps that may rise up as they worked through various case studies.

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Objectives

1. To comprehend the fundamental principles, generalizations and theories of product development.
2. To understand the specific skills, competencies and points of view needed by product development professionals.
3. To appreciate the interdependencies of finance, formulation, marketing, packaging, process engineering, production and quality assurance in the development of food products.
4. To better understand how food company managers gain knowledge about the process for developing food products.
5. To develop skills in analyzing ill-defined opportunities and developing strategies to resolve them.
6. To develop the competencies of effective communication and negotiation skills when working within groups/teams.
7. To develop the ability to be a self-regulated learner who can engage in both constructive and critical self- and peer-assessment.
8. To enhance the ability to use contemporary communications and information technology. To enhance oral and written communications skills.

Use of Case Studies

Wilson (1996) defines a constructivist learning environment as: "a place where learners may work together and support each other as they use a variety of tools and information resources in their guided pursuit of learning goals and problem-solving activities" (p.5). He emphasizes learning environments as opposed to 'instructional' environments in order to promote "a more flexible idea of learning", one which emphasizes "meaningful, authentic activities that help the learner to construct understandings and develop skills relevant to problem solving" (p.3).

Case studies have the capacity to engage students in the thinking process. Case-based reasoning is a cyclic and integrated process of solving a problem, learning from this experience, and solving new problems. The roots of case-based reasoning can be found in the works of Roger Schank on dynamic memory and the central role that a reminding of earlier situations (episodes, cases) and situation patterns (scripts, MOPs) has in problem solving and learning (Schank, 82). Each section of the case takes the student into new areas of cognitive exploration. Presenting the cases on the web as opposed to a written format provides the students with opportunities to explore and select particular information. Information that is presented without any direct and interactive activity will often pass right through their head without any processing or application. They are not likely to change the way they view a particular situation as a result of merely hearing the information. Due to the nature of most web pages, students' minds will race past topics in rapid succession with little time or opportunity to think, reflect or develop meaning. Their cognitive skills are only apparent on a scattered layer of thinking. They are forced to adopt a surface approach to their learning. Students are typically in a survival mode to read, memorize and reiterate the information in some sort of examination process.

Some of the problems of student understanding and learning can be enhanced through the use of alternative teaching approaches. This paper discusses a model used to promote critical thinking on the web using case studies. Aside from the basic issue of facilitating effective learning, there is a need to develop in students a method for problem-solving that will be useful in "real world" examples.

Interactive Aspects

Interactivity in the course invites the students to participate and become part of what is going on with the industry and the people influencing it. The cases were written for this class with the goals of instruction in mind. Each case had its own particular items that provided twists in the development process. Some gave the students very difficult decision points that required outside sources to gain more insights on the subjects. Students worked both individually, and, in groups to share ideas and solve the problems. Experts in the field were brought in through face-to-face presentations or over PictureTel

sessions. Email and phone calls were also used to give the students access to probe and investigate some of the key points in the case as well as questions related to their projects. Cases were shared with a discussion from both the instructor and student view.

Stimulating Learning

A great deal is known about factors that affect learning and in particular factors that facilitate a deep approach to learning. There are some specific methods that can be used to motivate students. Case studies provide the opportunity for critical thinking since they only provide part of the information needed to complete the exercises. Students will:

- formulate questions that relate to the current case
- construct knowledge while they are engaged in problem solving
- build on and diffuse what they already know
- have the opportunity to discuss, explain, write and reflect on the new knowledge
- experience some control over what, when and how they are learning
- have an opportunity to consider new possibilities
- receive feedback regarding their learning

Learners actively take knowledge, connect it to previously assimilated knowledge and make it theirs by constructing their own interpretation. Students will read a case with their own experiences and a cognitive structure based on those experiences. These structures can be valid, invalid or incomplete. The learner will reformulate his/her existing structures only if new information or experiences are connected to knowledge already in memory. The learner must actively construct new information onto existing mental framework for meaningful learning and problem solving to occur.

Selection of the Tools

Select appropriate online technologies such as video and audio conferencing, computer-mediated conferencing, Internet access, bulletin boards and news groups, and e-mail to support teaching and learning strategies. A short discussion of each tool and reasons to use them will follow.

TOOL	BENEFIT
Video and audio conferencing	Provides visual and audio cues
Computer-mediated conferencing	Initiate discussions
Internet access	A wealth of resources
Bulletin boards and news groups	Others interested in similar discussions
E-mail	Direct contact with teachers, students, and speakers

Tools to promote higher-order thinking should be used in this constructivist process. It is not only essential to place the students in a rich environment full of new technologies, but to provide a means and reason for using the tools. PictureTel was selected as a video conferencing method since both universities had access to it. It was used at least once a week in order to share speakers and provide access for group communication. CourseInfo was used as a course management system with advanced architecture that allowed for Web-based integration and administrative systems. This provided the framework for communication with the students and amongst the students. Students used the online system to have discussions and share information with other team members. Faculty used the system to post assignments and information.

Evaluation of Student Performance

Students were evaluated and the course grade assigned based on the following:

Individual Performance		Team Performance	
Final Examination	**15%**	**Progress Report: Oral**	**15%**
Peer Evaluation of Collaboration on Team	**20%**	**Final Report: Written**	**20%**
Participation	**15%**	**Final Report: Oral**	**15%**
TOTAL	**50%**	**TOTAL**	**50%**

The Final Examination (15%) is a description of the product development process for a specific food product opportunity. Peer Evaluation of Collaboration on Team (20%) is accomplished by asking students to rate their team members on eight different parameters and then to offer an overall weight by assigning the portion of a $10,000 bonus to be distributed to each team member. This evaluation will be done twice during the semester and at the end of the semester.

The Progress Report (15%) is a team-based oral presentation simulating the product development team's presentation of its plans to the firm's upper management for a 'go-no go' decision. The Final Report (35%) is their team's presentation of the food product innovation to retail buyers.

Aspects of the Partially Collaborative Course

The class in this partially collaborative course was taught at St. Joseph's University. It consisted of a combination of lecture, presentations, discussion and exercises. Guest presentations from food industry professionals were provided. The major emphasis of the course was on the new product planning process and to that end, each student was assigned to a student team. Each team took on the identity of a food processing company and was challenged to identify a new product opportunity, conceive a new product, and develop a launch program to support introduction of this new product to the supermarket trade. Both a written paper and a formal oral presentation were required of each student team. The final presentations were made to a group of retail category managers. The final presentations were held during the scheduled time for the final exam.

Course Objectives

1. To develop skills necessary to be a contributing member of a team.
2. To enhance oral and written communications skills.
3. To develop skills in analyzing ill-defined problems and developing strategies to resolve them.
4. To better understand how food company managers gain knowledge about the process for developing food products.
5. To comprehend the fundamental principles, generalizations and theories of product development.
6. To understand the specific skills, competencies and points of view needed by product development professionals.
7. To appreciate the interdependencies of finance, formulation, marketing, packaging, production and quality assurance in the development of food products.

Class Format

The class format consists of a combination of lecture, presentations, discussion and exercises. The instructor will endeavor to provide guest presentations from food industry professionals on at least a couple of occasions.

Assignments and Grading Policy

This course is primarily a team-based course. Each student had one major individual task – a midterm examination. The bulk of the grade was determined by the quality and completeness of the work on the semester project. The grade was determined as follows:

Midterm examination.....40%
Individual grade on NPD project 50%
The project grade will be divided into two components, the preliminary presentation to the management committee (1/3) and the final presentation (1/3) and comprehensive team paper (1/3.)
Contadina case (special project).....10%*

***If you opt NOT to participate in the Contadina special project, you will** need to complete a short research paper on a topic assigned by the instructor.

Note: The individual grade for team assignments will be the team grade multiplied by an index number which reflects the quantity and quality of your contribution to the team effort.

The project consists of several parts, including a (1) company review and assessment, (2) category assessment, (3) concept development and screening, (4) product development and testing and (5) introductory marketing program and launch plan. Class time will be used to discuss more specifics about the project and details on the midterm and the project. The paper is due at the time of the final presentation.

Aspects of the Traditional Course

The third course was taught in a more traditional mode. There were lectures, tests and a project. This class also participated in some of the PictureTel sessions with the industry speakers.

Course Objectives

1. To comprehend and apply the fundamental principles, generalizations and theories of product development.
2. To understand and apply the skills, competencies and viewpoints needed by product development professionals.
3. To appreciate the interdependencies of R&D, manufacturing, finance, marketing and sales in the development of successful food products.
4. To develop skills in analyzing and taking advantage of ill-defined opportunities.
5. To understand the risks and rewards associated with new food products.
6. To enhance personal skills: team work; oral presentation; written presentation; selling.

Grade Components and Weights

Semester Project: Written:	40%
Oral:	20%
Special Semester Project:	10%
Class Participation:	15%
Midterm Examination:	15%

Semester Project

The course has three major emphases: developing a new food product; selling the concept to top management; selling the product to the retail supermarket trade. Each student was assigned to a team. Each team will select and assume the identity of a food manufacturing company and will: identify a new product opportunity; conceive a new product; and develop a launch program to introduce the new product to consumers in coordination with the supermarket distribution channel.

Each team submitted a written paper of 20 pages or less, excluding appendices, detailing its new product development and launch programs. The paper was due on December 6. An in-process draft was due on November 21.

Each team prepared a sell-in presentation to be made to a panel of grocery category managers in December, exact date and place to be determined.

The Study

This study is primarily looking at the differences in learning using different teaching methods. The evaluation of the students was essential to measure those differences. There was a pre-test and a post-test to assist in analysis. Many methods were implemented that will be discussed.

Conventional Teaching

There are typical elements found in conventional teaching practices. The curriculum content is usually fixed and presented in linear and sequential ways. A path of learning is established and sequentially used for the course. Mastery of existing knowledge and concepts is sought before students are led to the next set. Typical activities involve learning tasks that are segmented and fragmented to make them more easily achieved. These can include reading and lectures relevant to each particular subject. The activities tend to lack any real life context and are usually presented in abstract forms bearing little relevance to settings beyond the classroom. In most cases, the teacher plays the role of the expert delivering knowledge to the learners. Learners act in passive modes working individually to complete the set tasks. Assessment of learning is done through pencil and paper tests measuring competency in the various elements of the curriculum.

Learners have frequently been found to be incapable of applying and transferring the learning to practical settings. Learning has been found to be temporary and short-lived.

Active Learning and Teaching Methods

For some time now, educational researchers, classroom teachers and curriculum developers have been exploring ways to increase the effectiveness of teaching programs and in particular, classroom learning. The learning theories have always suggested that what is needed is more active involvement of the learners in the learning process. Theories of learning have been developed which explain the way in which learning is achieved through knowledge construction. The integral role of communication between learners has been explored and the value of collaboration and co-construction of knowledge developed. At the same time, curriculum developments have moved from descriptions of the content to be learned to environments where outcomes of learning have been made discrete. The role of assessment has been recognized and given a more fundamental place in the learning process. The sum of these developments suggests a changed direction for educational planning.

Changed Roles for Learners

The first thing often observed about learners in an active learning environment is the degree of self-regulation and self-determination. Students are expected to search for meaning throughout the course through resources provided. Formal structures are removed and students are free to make their own connections and pathways. Some of these include:

- Freedom of Information

Information is provided in an open setting such as the web, speakers, case studies and the course faculty. A book is also used in this setting to provide examples and more detailed explanations. Much of

the information that was gathered by the students came from prior experience, discussions, web pages, speakers, interactions with the faculty and cross-institutional dialog.

- Active Learners

Students are encouraged to collaborate and work together. The environment is usually one of a shared learning space with learners attentive and receptive to others in the class. Students are asked to solve problems and ask questions. They are expected to work with the other students in their group to accomplish tasks.

- "Real-life" Activities

Activities in class encourage and support such strategies as problem-based learning, case-based learning and presentations from those in the industry. The concept of a classroom as a place of learning is expanded as the classroom loses it boundaries. Each case study was written with the specific goals of the course in mind. It was important to provide examples of the various stages in the food product development cycle so that the students could make application toward their final project.

Changed Roles for the Teachers

Teachers in active learning environments differ in terms of their roles and responsibilities. The differences appear in how they interact with their learners and how they manage and implement their learning settings. Some of these roles include:

- The Coach

Their role is that of a guide or a coach. They provide the learners with access to a variety of independent learning experiences. There are minimum times that there is a need for lecturing or other forms of teacher-directedness in these settings. The most active person in the environment is the learner and often the teacher is a spectator of learning shouting advice from the sidelines.

- Instructional/Learning Designer

The teacher will play a vital role in designing the learning activities and developing creative ways to involve the students. Instead of only considering what is being taught, the teacher has to be thinking of how it is taught and what the possible outcomes will be.

- Assessment

The move to an outcomes-oriented approach carries with it changes to assessment strategies. These strategies reflect how the learning is to be used. Some of these approaches include teamwork strategies, case study analysis, projects, presentations, and summary papers.

Summary

The three courses will be used to make comparisons in the teaching methods to find differences in outcomes for the students. Each course contains components of constructivism in the approach to teaching especially regarding the use of case studies. The major differences are the methods of learning and the involvement of the students in the learning process. Students will be surveyed at the end with another concept map and mini test to compare the results from the beginning of the class to the end. The knowledge presented was similar, but the methods used were extremely different. Some of the questions to be answered regard the depth and application of the concepts that are obtained.

References

Grabe, M. and Grabe, C. (2000). Integrating technology for meaningful learning. Boston: Houghton Mifflin.

Jonassen, D.H. (1996). Computers in the classroom: Mindtools for critical thinking. Columbus, OH: Merrill/Prentice-Hall.

Schank, R. (1982). Dynamic memory: A theory of reminding and learning in computers and people. New York: Cambridge University Press.

Wilson, B. (Ed.) (1996). Constructivist learning environments: Case studies in instructional design. New Jersey: Educational Technology Publications.